Exhibit 300: Capital Asset Summary

Part I: Summary Information And Justification (All Capital Assets)

Section A: Overview & Summary Information

Date Investment First Submitted: 2010-09-17
Date of Last Change to Activities: 2012-02-24
Investment Auto Submission Date: 2012-02-27
Date of Last Investment Detail Update: 2012-02-27
Date of Last Exhibit 300A Update: 2012-08-23
Date of Last Revision: 2012-05-01

Agency: 021 - Department of Transportation **Bureau:** 12 - Federal Aviation Administration

Investment Part Code: 01

Investment Category: 00 - Agency Investments

1. Name of this Investment: FAAXX802: NextGen R&D Flexibility in Terminal Environment (FLEX)

2. Unique Investment Identifier (UII): 021-244481932

Section B: Investment Detail

1. **Provide a brief summary of the investment, including a brief description of the related benefit to the mission delivery and management support areas, and the primary beneficiary(ies) of the investment. Include an explanation of any dependencies between this investment and other investments.**
NextGen is a series of inter-linked programs, systems, and policies that implement advanced technologies and capabilities to dramatically change the way the current aviation system is operated. NextGen is satellite-based and relies on a network to share information and digital communications so all users of the system are aware of other users' precise locations. The FLEX solution set is a portfolio of research and development projects focused on improving efficiency of operations. It concentrates on improvements in the access, situational awareness, and separation services that airports of all sizes may require. Unlike the high-density solution set that focuses on increased complexity of traffic management to manage demand at large airports, this solution set reflects the common needs that all airports have: precision landing guidance, surface situational awareness, and improved management of flight data. Flexible terminal operations will serve a mix of Instrument Flight Rules (IFR)/Visual Flight Rules (VFR) traffic, with aircraft types ranging from airline transport to small general aviation aircraft. We anticipate that some satellite airports will experience higher traffic demand due to migration of aircraft with less sophisticated avionics to these smaller airports to avoid traffic congestion. These airports can serve an important role by handling the potential increase in use of personal aircraft for pleasure and business.

2. **How does this investment close in part or in whole any identified performance gap in support of the mission delivery and management support areas? Include an assessment of the program impact if this investment isn't fully funded.**

FLEX will increase efficiency and reduce congestion in terminal environments across the NAS. Wake Turbulence Mitigation for Departures (WTMD): allowing more departure operations on an airport's closely spaced parallel runways (CSPR). A small laptop-sized computer processes observed and forecasted wind information, enhancing tower controller display areas to indicate which runways can be used for immediate departures after a aircraft departs on an adjacent CSPR. The wake turbulence generated by a departing or heavier aircraft presents a danger to aircraft that depart after them on an adjacent CSPR. Aircraft-generated wakes are transported by crosswinds. The WTMD system measures and forecasts runway crosswinds to determine when there will be sufficient crosswind to prevent the wake from a departing aircraft from moving into the corridor of an aircraft departing on an adjacent runway. Using WTMD during periods of favorable crosswinds allows controllers to maximize the departure capacity of an airport's CSPR. Wake Turbulence Mitigation for Arrivals (WTMA) allows controllers to reduce the instrument flight rules wake mitigation dependent staggered separation for two aircraft landing on an airport's adjacent CSPR. Use Optimized Profile Descent permits aircraft to minimize power settings during descent to an airport to save fuel. Low Visibility Surface Operations improves the safety and efficiency of aircraft and ground vehicle movements on the airport surface because tower controllers have improved location information. During dark or foggy conditions controllers, pilots and ground equipment operators need help in avoiding conflicts on the airport surface. Reducing funding would delay benefits beyond the 2012-2018 plan.

3. **Provide a list of this investment's accomplishments in the prior year (PY), including projects or useful components/project segments completed, new functionality added, or operational efficiency achieved.**

Completed Program Level As-Is Enterprise Architecture Artifacts for Surface/Tower/Terminal Systems Engineering; Completed the final Concept of Use for SWIM Segment 2 for Surface/Tower/Terminal Systems Engineering; Completed the Terminal Enterprise Architecture products for Surface/Tower/Terminal Systems Engineering; Updated and coordinated the DRAFT CAT III Safety Risk Management Guidance for System Acquisition documentation; Operational Safety Assessment; Completed a field evaluation of the Required Time of Arrival Concept at Seattle Air Route Traffic Control Center, leveraging Flight Management Systems (Flight Deck) capabilities and the Traffic Management Advisor system; Delivered technical report for Flight Trial 1; Completed Human-in-the-Loop (Air-Ground synch) Simulation Initial Report.

4. **Provide a list of planned accomplishments for current year (CY) and budget year (BY).**

FY12: Accomplish WTMD rework required based on the ongoing WTMD operational evaluation at IAH; Provide WTMD training for SFO personnel; Complete regional service center engineering and installation of WTMD components in SFO's ATCT; Install data links necessary for WTMD operation at SFO; Completion of more extensive HITL evaluation of the WTMA process and procedures and associated prototype ATC decision support tool software; Plan the single runway application (WTMSR) of the WTMA developed technology; Validate detailed TFDM requirements via prototype demonstrations/evaluation in the field, in support of TFDM acquisition; Finalize Category III ground facility specification; Award contract to validate Category III avionics standards and interoperability; Complete GBAS operational feasibility determination; Complete initial concept of operations for Navigation Surface Requirements; Develop performance requirements for independent and paired approaches; Complete Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) Light Emitting Diode (LED)/Infrared (IR) lamps prototype design; Conduct functional configuration audit for Precision Approach Path Indicator (PAPI) LED program; Complete evaluating the ability of aircraft to accurately meet vertical constraints and required time of arrival; Complete evaluating DataComm for aircraft messaging for Required Time of Arrival (RTA), reroutes, and waypoint verification data integrity. FY13: Update of TFDM software, including TFDM-1 PPPI DSTs resulting in prototype enhancements; Test commercially developed RFI-Robust GBAS Category III Prototype Ground System; Requirements development for RFI-Robust GBAS Category III prototype avionics; Review of System Design Approval (SDA) artifacts by the GBAS technical team, leading toward Non-Federal GBAS CAT III approval in FY2016; Perform Operational Site Testing & Demonstrations for Terminal RNAV DME-DME; Alternatives analysis for Surface Navigation; Assess security technology, common time reference, future RFI environment; Prepare OSA, safety requirements for integrity, continuity, and time-to-arrival (TTA), top-level designs, estimate performance and cost for full scale development; Complete evaluating Data Comm for aircraft messaging for Required Time of Arrival (RTA), reroutes, and waypoint verification data integrity.

5. **Provide the date of the Charter establishing the required Integrated Program Team (IPT) for this investment. An IPT must always include, but is not limited to: a qualified fully-dedicated IT program manager, a contract specialist, an information technology specialist, a security specialist and a business process owner before OMB will approve this program investment budget. IT Program Manager, Business Process Owner and Contract Specialist must be Government Employees.**

2011-03-01

Section C: Summary of Funding (Budget Authority for Capital Assets)

1.

Table I.C.1 Summary of Funding

	PY-1 & Prior	PY 2011	CY 2012	BY 2013
Planning Costs:	$101.4	$57.4	$33.3	$30.5
DME (Excluding Planning) Costs:	$0.0	$0.0	$0.0	$0.0
DME (Including Planning) Govt. FTEs:	$0.0	$0.0	$0.0	$0.0
Sub-Total DME (Including Govt. FTE):	$101.4	$57.4	$33.3	$30.5
O & M Costs:	$0.0	$0.0	$0.0	$0.0
O & M Govt. FTEs:	$0.0	$0.0	$0.0	$0.0
Sub-Total O & M Costs (Including Govt. FTE):	0	0	0	0
Total Cost (Including Govt. FTE):	$101.4	$57.4	$33.3	$30.5
Total Govt. FTE costs:	0	0	0	0
# of FTE rep by costs:	0	0	0	0

Total change from prior year final President's Budget ($)		$-23.3	$-24.8	
Total change from prior year final President's Budget (%)		-28.91%	-42.69%	

2. If the funding levels have changed from the FY 2012 President's Budget request for PY or CY, briefly explain those changes:

FY12 funding reduced due to FY12 appropriation adjustment as well as removal of DOT infrastructure adjustment.

Section D: Acquisition/Contract Strategy (All Capital Assets)

Table I.D.1 Contracts and Acquisition Strategy

Contract Type	EVM Required	Contracting Agency ID	Procurement Instrument Identifier (PIID)	Indefinite Delivery Vehicle (IDV) Reference ID	IDV Agency ID	Solicitation ID	Ultimate Contract Value ($M)	Type	PBSA ?	Effective Date	Actual or Expected End Date
Awarded		NEW BEDFORD PANORAMEX CORPORATION									
Awarded		DTFAWA-10-C-00072									
Awarded		NEW BEDFORD PANORAMEX CORPORATION									
Awarded		DTFAWA-10-C-00071									
Awarded		AJT/AJE 2nd level support DTFACT-09-D-00010, SOS-7, Task 4									

2. If earned value is not required or will not be a contract requirement for any of the contracts or task orders above, explain why:
FAA's AMS includes policy and guidance on the utilization of EVM, and EVM is applied to NextGen investments in accordance with this policy. Once programs are approved and baselined, EVM is conducted in accordance with FAA and DOT policy. Investments described in this Exhibit are managed in the NextGen Portfolio Management Framework which requires project level agreements (PLAs) that document project scope, purpose, planned cost, major milestones and relationships to other programs and the NAS EA. This information is maintained in an automated tool where project managers provide monthly status on activities. The data maintained in the tool provides an annual master milestone list and current status information. For each activity a project plan and a supporting project schedule are developed to document major milestones, decisions and deliverable.

Exhibit 300B: Performance Measurement Report

Section A: General Information

Date of Last Change to Activities: 2012-02-24

Section B: Project Execution Data

Table II.B.1 Projects

Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
G06A0101	Separation Management - Wake Turbulence Mitigation for Departures (WTMD)	The Wake Turbulence Mitigation for Departures (WTMD) decision support tool will enhance air traffic wake mitigation separation service capabilities. Air Traffic Control (ATC) wake turbulence mitigation procedures are a major constraint on the departure operations at airports which use closely spaced parallel runways for departing 757 and heavier aircraft. Presently, aircraft must wait a minimum of two minutes to depart after the departure of a 757 or heavier aircraft on the adjacent closely spaced parallel runway and must wait a minimum of three minutes if the departure thresholds of the closely spaced parallel runways are staggered more than 500 feet. The WTMD decision support tool will provide tower controllers notification when they can safely allow departures on an airport's closely spaced parallel runways without the mandatory two to three			

Table II.B.1 Projects					
Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
		minute wait time following a 757 or heavier aircraft departure on the adjacent runway.			
G06A0102	Separation Management - Wake Turbulence Mitigation for Arrivals (WTMA)	The Wake Turbulence Mitigation for Arrivals (WTMA) program will evaluate air traffic control decision support tool concept feasibility prototypes as possible enablers to safely meet the predicted NextGen demand for additional flights in the nation's air transportation system. If these prototypes are successful, more flights can be accommodated in the existing airspace because the required wake mitigation separations between aircraft can be safely reduced. This program is taking the results of technology research and development and new wake separation concept modeling and simulation efforts and is evaluating the resulting concept feasibility prototypes for flight safety and impact on the NAS capability for meeting the demand for more flights. Evaluation of the prototype WTMA decision support tool will continue and requirements for implementing the WTMA capability will be developed. The FY12 evaluation of WTMA will lead to an FAA decision in FY13 to transform the capabilities of the prototype software tool into a functioning decision support tool integrated into the terminal automation system for use by the FAA air traffic controllers. First operational benefit will be realized during FY15 when the WTMA controller decision support			

Table II.B.1 Projects

Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
		tool capability is fielded as part of a software release to a FAA terminal automation system.			
G06A0201	Surface/Tower/Terminal Systems Engineering (TFDM)	The primary goal of this activity is to provide engineering analyses, evaluations, and benefit assessments that will support terminal NextGen capabilities. A concept engineering analysis of proposed Terminal Radar Approach Control (TRACON) and Tower and Surface traffic management capabilities will be performed to determine which concepts are most beneficial to safely increase capacity, reduce traffic delays, lower costs, and reduce impact on the surrounding environment. The expected outcome of these efforts will result in enhanced capabilities that provide more efficient, safer movement and control of air traffic in the terminal domain. This will also ensure smoother transition into and out of the terminal airspace in support of consolidation of airspace and provide guidance for implementing projects as part of the NextGen Concept of Operations. In previous years, the enabling technologies/information was assessed and methods developed for gathering data, integrating information (i.e., flight data object, clearance (taxi/takeoff) information, surveillance information, user (aircraft/pilot/ airport operators)) and receipt/acceptance of that data. Based on these capabilities, a series of decision support tools			

Table II.B.1 Projects

Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
		were identified. These tools will enhance/optimize airport surface traffic management efficiency, mitigate risk of safety related incidents, and support the overall movement of air traffic in the terminal environment.			
G06C0101	Flight and State Data Management - Future Communications Infrastructure	The Future Communications Infrastructure program contains communications projects in both the C and L bands. The C-band program of Future Communications will evaluate selected mobile and fixed applications of the Aeronautical Mobile Airport Communications System (AeroMACS) communication network in the National Aeronautics and Space Administration - Cleveland Hopkins International Airport (NASA-CLE) airport test bed for future provisioning of both safety critical and advisory services. The program will also validate that the proposed AeroMACS can provide the required capabilities for a selected mobile application (e.g., loading Flight Management System (FMS) at the gate), and a fixed application (e.g., migration of point-to-point links to the AeroMACS).			
G06N0101	Separation Management - Approaches, Ground Based Augmentation System	The Local Area Augmentation System (LAAS) is the United States system that meets internationally accepted standards for a Ground Based Augmentation System (GBAS). GBAS augments the current Global Positioning System (GPS) service for terminal, non-precision, and precision			

Table II.B.1 Projects					
Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
		approaches in the National Airspace System (NAS). GBAS is the only cost effective alternative to Instrument Landing System (ILS) for Category II/III operations because a single facility can serve an entire airport versus multiple ILS facilities (one at each runway end). The FAA identified GBAS as an "Enabler" for NextGen.			
G06N0102	Separation Management - Closely Spaced Parallel Runway Operations (CSPO)	The Separation Management - Closely Spaced Parallel Runway Operations (CSPO) initiative will accelerate activities to provide increased arrival, departure, and taxi operations to airports with closely spaced parallel runways in all weather conditions. This initiative will enhance procedures that allow dependent operations to closely spaced parallel runways or converging approaches to runways closer than 2,500 feet, as well as support independent operations to parallel runways between 2,500 and 4,300 feet.			
G06N0103	Separation Management - Approaches, NextGen Navigation Initiatives	This program supports maintaining/improving capacity during Instrument Meteorological Conditions (IMC), and focuses on improvements supporting both the terminal and approach phases of flight as well as improving situational awareness on the airport surface. The main program element supports low visibility enhanced operations by lowering required Runway Visual Range (RVR)-defined minimums during IMC. This work allows a greater number of takeoffs and			

Table II.B.1 Projects					
Project ID	**Project Name**	**Project Description**	**Project Start Date**	**Project Completion Date**	**Project Lifecycle Cost ($M)**
		landings when visibility is limited. This effort is in the implementation phase and will have near-term NextGen operational benefits by increasing National Airspace System (NAS) capacity and throughput. Part of this program will leverage the capabilities of existing systems to the extent possible and explore how new pilot-avionics interfaces may be used to deliver service to the cockpit.			
G06N0104	Separation Management - Approaches, Optimize Navigation Technology	This program supports developing new technology for existing navigation systems that improve reliability and lower the cost of operations. Improvements will include all existing approach lighting systems, other lighted navigation aids, precision and non-precision approach systems, and terminal and en route navigation systems. The new technology efforts will include analyses of the physical, electrical (electronic), and economic characteristics of these systems to determine what type of technology insertion or changes in the system would result in improved efficiency. Two of the initiatives will focus on the current Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). The first initiative is to replace the existing incandescent lamps with Light Emitting Diode (LED) technology, without modifying the rest of the MALSR system. The second			

Table II.B.1 Projects					
Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
		initiative is to redesign the entire MALSR system to include LED technology, solid state switching, and electrical distribution technology. LED lamps have been under prototype development for some time. In order to gain the full benefits of modernizing the MALSR, the second initiative for a complete MALSR redesign of the power and control system is needed to optimize efficiency and reliability.			
G06N0105	Separation Management - Automated Terminal Proximity Alert (ATPA) and Relative Position Indicator (RPI)	Relative Position Indicator (RPI) provides flight specific spacing information to support merging multiple Area Navigation (RNAV) routings in the terminal. It directly supports the more efficient and high demand use of Area Navigation (RNAV)/Required Navigation Performance (RNP) procedures by enhancing the existing Converging Runway Display Aid (CRDA) function of the terminal automation platforms (Standard Terminal Automation Replacement System (STARS) and Common Automated Radar Terminal System (CARTS)). RPI will display accurate indicators of aircrafts' relative positions onto a merging traffic flow. The advantage of RPI is its ability to accurately project a target image of an aircraft target on an RNAV arrival path with acceptably realistic flight dynamics over a wide range of operational conditions. Implementation of RPI will affectively allow RNAV arrival merging applications in the terminal environment and aid the			

Table II.B.1 Projects					
Project ID	**Project Name**	**Project Description**	**Project Start Date**	**Project Completion Date**	**Project Lifecycle Cost ($M)**
		air traffic controller in merging traffic into the terminal environment.			
G06N0201	Trajectory Management - Arrivals	The enablers for Trajectory Management ((Area Navigation (RNAV)/Required Navigation Performance (RNP) with 3D and Required Time of Arrival) will ensure the safe and efficient transition of aircraft from en route to terminal airspace with appropriate sequencing and spacing. Metered times at key merge points will be used by air traffic managers. For this type of operation, an aircraft's Meter Point Time (MPT) is assigned to determine when it enters into the Terminal Radar Approach Control (TRACON) airspace so it can be efficiently routed to the assigned runway. Metering will take into account runway load balancing and will serve to reduce (not eliminate) the need for delay absorption needed for aircraft inside the TRACON airspace. As the FAA transitions to NextGen, aircraft will increasingly be assigned to RNP/RNAV routes and have modern avionics that include Flight Management Systems (FMS) capable of executing Required Time of Arrival (RTA) instructions. The RTA capability provides a time-based control mechanism that supports the trajectory-based operations concept. RTAs will be used for the management of arrival traffic to an airport. The use of RTAs will take advantage of existing capabilities expected			

Table II.B.1 Projects					
Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
		to become more widespread throughout the fleet. The FMS in the aircraft computes the most efficient change to the original trajectory to meet the RTA. In addition, the FMS can "independently self deliver" to the RTA, thus reducing significantly the coordination needed between the user and ATC. Since the FMS actively and directly "controls" the aircraft to meet the RTA, very accurate arrival is possible with minimal human intervention.			
G06N0202	Trajectory Management - Reduced Runway Visual Range (RVR) Minima	Weather causes numerous flight delays and schedule interruptions each year. Weather conditions create low visibility conditions that require Instrument Flight Rules (IFR) to go into effect. Even for those aircraft with suitably trained crew and equipage, conditions may worsen, causing flight diversion, flight cancellation, or flight delays, each of which can result in a cascading ripple effect that can spread throughout the National Airspace System (NAS), even to areas where weather is not an issue. There are periods of low visibility when the aircraft cannot takeoff or land at their desired airport resulting in the following conditions: decreased numbers of arrivals/departures at high density airports; increased flight delays, cancellations, and/or diversions under IFR low visibility conditions; decreased capacity for airlines to schedule flights in marginal weather conditions (since both the primary and			

Table II.B.1 Projects					
Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
		alternate routes must be approved within the flight plan); and decreased flexibility/potential congestion in the terminal environment. These problems can limit or prevent access to airports in IFR conditions, resulting in congestion and delay in the NAS. Even under Visual Flight Rules (VFR), access to airports and utilization of airspace can be made more flexible, particularly in the terminal environment. Therefore, lowering required RVR minima will improve capacity during low visibility operations by allowing runways that would otherwise be unusable to continue to support airport operations.			

Activity Summary

Roll-up of Information Provided in Lowest Level Child Activities

Project ID	Name	Total Cost of Project Activities ($M)	End Point Schedule Variance (in days)	End Point Schedule Variance (%)	Cost Variance ($M)	Cost Variance (%)	Total Planned Cost ($M)	Count of Activities
G06A0101	Separation Management - Wake Turbulence Mitigation for Departures (WTMD)							
G06A0102	Separation Management - Wake Turbulence Mitigation for Arrivals (WTMA)							
G06A0201	Surface/Tower/Terminal Systems Engineering (TFDM)							

Activity Summary

Roll-up of Information Provided in Lowest Level Child Activities

Project ID	Name	Total Cost of Project Activities ($M)	End Point Schedule Variance (in days)	End Point Schedule Variance (%)	Cost Variance ($M)	Cost Variance (%)	Total Planned Cost ($M)	Count of Activities
G06C0101	Flight and State Data Management - Future Communications Infrastructure							
G06N0101	Separation Management - Approaches, Ground Based Augmentation System							
G06N0102	Separation Management - Closely Spaced Parallel Runway Operations (CSPO)							
G06N0103	Separation Management - Approaches, NextGen Navigation Initiatives							
G06N0104	Separation Management - Approaches, Optimize Navigation Technology							
G06N0105	Separation Management - Automated Terminal Proximity Alert (ATPA) and Relative Position Indicator (RPI)							
G06N0201	Trajectory Management - Arrivals							
G06N0202	Trajectory Management - Reduced Runway Visual Range (RVR) Minima							

Activity Summary

Roll-up of Information Provided in Lowest Level Child Activities

Project ID	Name	Total Cost of Project Activities ($M)	End Point Schedule Variance (in days)	End Point Schedule Variance (%)	Cost Variance ($M)	Cost Variance (%)	Total Planned Cost ($M)	Count of Activities

Key Deliverables

Project Name	Activity Name	Description	Planned Completion Date	Projected Completion Date	Actual Completion Date	Duration (in days)	Schedule Variance (in days)	Schedule Variance (%)

NONE

Section C: Operational Data

Table II.C.1 Performance Metrics

Metric Description	Unit of Measure	FEA Performance Measurement Category Mapping	Measurement Condition	Baseline	Target for PY	Actual for PY	Target for CY	Reporting Frequency

NONE